

REMARKS

Claims 14-27 are currently pending, and of those, claims 24-27 have been withdrawn from consideration as a result of the Response filed by Applicant electing the invention set forth in claims 14-23. The claims have not been amended and, in view of the following remarks, Applicant respectfully submits that all pending claims are allowable over the cited prior art.

Response to the Objection of the Abstract:

In response to the Examiner's comments on page 2 of the Office Action and in compliance with 37 C.F.R. §1.72 and MPEP §608.01(b), Applicant submits that an Abstract was included in a Preliminary Amendment filed April 17, 2006. Applicant has submitted with this Response, however, an Abstract on a separate sheet.

Response to Double Patenting Rejection:

On page 3 the Examiner rejected claims 14-23 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,924,046 (Stamm) in view of Sommer et al. (US Patent No. 6,280,857), hereinafter "Sommer." Applicant notes that the subject application has a priority date of October 17, 2003, and the Stamm patent has a later filing date of November 5, 2003. Applicant also notes that the subject application and Stamm are commonly owned by Siemens AG. Accordingly, the enclosed Terminal Disclaimer obviates the double patenting rejection.

Rejection of Claims 14 and 19 Under 35 U.S.C. §102(b):

Claims 14 and 19 stand rejected under 35 U.S.C. §102(b) as being anticipated by Sommer. More specifically, the Examiner cites Sommer as disclosing a composition for an oxidation resistant layer including various components including cobalt at 18-28% by weight. The Examiner then cites the MPEP indicating that prior art which teaches a range within, overlapping or touching the claimed range anticipates if the prior art range does not substantially deviate from the claimed range. According to MPEP 2131.03 II:

When the prior art discloses a range which touches or overlaps the claimed range, but no specific examples falling within the claimed range are disclosed, a

case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with "sufficient specificity to constitute anticipation under the statute." What constitutes a "sufficient specificity" is fact dependent. If the claims are directed to a narrow range, and the reference teaches a broad range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is now disclosed with "sufficient specificity" to constitute an anticipation of the claims.

Applicant notes that both independent claims 14 and 19 include a narrow range of percent by weight of cobalt including 24-26% range in comparison to the much larger 10% range disclosed in Sommer. Applicant submits that Sommer does not disclose sufficient specificity to constitute anticipation of these claims.

The Examiner's attention is directed to paragraphs 31- 35 of the subject application:

[00031] It should be noted that the levels of the individual elements are specifically adapted with a view to their actions as seen in conjunction with the element rhenium. If the levels are such that no chromium-rhenium precipitates are formed, brittle phases are advantageously not formed while the protective layer is in use, so that the service life is improved and lengthened.

[00032] This is achieved not only by a low chromium content but also, taking into account the influence of aluminum on the phase formation, by accurately setting the aluminum content.

**[00033] Selecting 24 to 26% cobalt surprisingly significantly and disproportionately improves the thermal and mechanical properties of the protective layer 7.**

[00034] With this narrowly selected range of cobalt, the initial and further formation of the  $\gamma$  phase of the alloy, which normally leads to a peak in the coefficient of thermal expansion of the alloy, is particularly successfully suppressed. Otherwise, when the component having the protective layer 7 is heated up (i.e. when the turbine is started up), or in the vent of other temperature fluctuations, this peak would cause high mechanical stresses (thermal mismatch) between protective layer 7 and substrate 4.

[00035] This is at least drastically reduced by the cobalt content which has been selected in accordance with the invention. (emphasis added).

Thus, Applicant has found that this narrow percentage range of cobalt relative to the other components, including rhenium, **surprisingly, significantly and disproportionately** improves the thermal and mechanical properties of the claimed protective layer. Similarly, the percent by weight of rhenium claimed is only 0.5 % to 2% which is a comparatively narrower range than the 1% to 8% disclosed in Sommer. As provided in the specification above the levels of individual elements are specifically adapted in view of their actions with rhenium to avoid forming brittle phases that may be caused by chromium-rhenium precipitates. Accordingly, Applicant submits that Sommer fails to provide sufficient specificity to constitute anticipation.

Rejection of Claims 14-17 and 19-22 Under 35 U.S.C. 102(b) – Czech et al. ('238 Patent):

Claims 14-17 and 19-22 stand rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious under Czech et al. (U.S. Patent No. 5,268,238), hereinafter "Czech '238." The Examiner acknowledges that Czech '238 does not expressly specify a range for the cobalt in the composition disclosed therein. The Examiner argues that "a remainder primarily being at least one of the elements iron, nickel, and cobalt" disclosed in Czech '238 provides one of ordinary skill in the art a finite list of variables which mathematically includes the claimed language range 24-26% cobalt. The fact that the ranges of percent by weight of the elements including rhenium (1%-20%), chromium (15%-50%) and aluminum (0%-15%) in Sommer are so large can only mean that there would be a significantly larger range (compared to claims 14 and 19) of cobalt that may be used as a remaining element. Such a range is much too large to provide sufficient support in the specification to warrant a rejection under 102(b) as argued above in relation to Sommer.

Nor would it have been obvious to use such a narrow percent range of cobalt as claimed relative to the narrow percent range rhenium. The Examiner argues that Czech '238 provides motivation to do so because Czech '238 recognizes that the amount of cobalt is a result effective variable whose properties are directly related to corrosion resistance. However, as provided above, selecting 24 to 26% cobalt surprisingly, significantly and disproportionately improves the **thermal and mechanical properties** of the protective layer 7. Czech '238 does not suggest that

providing these relatively narrow ranges of percentages of rhenium and cobalt will result in improved mechanical and thermal properties.

Rejection of Claims 14-17 and 19-22 Under 35 U.S.C. 102(b) – Czech et al. ('712 Patent):

Claims 14-17 and 19-22 stand rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over Czech et al. (U.S. Patent No. 5,273,712), hereinafter "Czech '712." Czech '712 is part of the same family of patents as that of Czech '238 and does not provide any more relevant disclosure and does not anticipate independent claims 14 or 19 for the above stated reasons. Nor would it have been obvious to modify Czech '712 as provided above.

Rejection of Claims 14-23 Under 35 U.S.C. 102(b) - Stamm (US Patent No. 6,610,419):

Claims 14-23 stand rejected under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over WO 99/55527 corresponding to Stamm (U.S. Patent No. 6,610,419), hereinafter "WO '527." The Examiner has noted that WO '527 discloses a composition including rhenium in the range of 0-20%. In addition, the Examiner acknowledges that WO '527 does not explicitly specify a range for the cobalt in the taught composition and provides the above argument that given the finite list of variables including cobalt that it discloses a claim range of 24-26%. As noted above, given the significant range of the elements such as 0-20% rhenium, 15-35% chromium, and 7-18% aluminum that are so large can only mean that there would be a significantly larger range of cobalt (relative to the narrowly claimed range) that may be used as a remaining element. Such a range is much too large to provide sufficient support in the specification to warrant a rejection under 102(b) as argued above in relation to Sommer and Czech '238. Nor would it have been obvious to use such a narrow percent range of cobalt as claimed relative to the narrow percent range rhenium.

However, as provided above, selecting 24 to 26% cobalt surprisingly, significantly and disproportionately improves the thermal and mechanical properties of the protective layer 7. WO '527 does not suggest that providing these relatively narrow ranges of percentages of rhenium and cobalt will result in improved mechanical and thermal properties.

Rejection of Claims 14-23 Under 102(b) – Stamm (US Patent Pub. No. 2003/0207151):

Claims 14-23 stand rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over EP 1 306 454 corresponding to Stamm US Patent Pub. No. 2003/0207151, hereinafter “EP ‘454.” Applicant acknowledges that EP ‘454 teaches a coating composition comprising 0.5-2% Re, 15-21% Cr, 9-11.5% Al and 0.05 - .7% at least one rare earth and the balance of nickel and/or cobalt. Even given the small percentage range of rhenium disclosed in EP ‘454 there remains a potentially range of percentage of cobalt as compared to the narrower 24-26% claimed cobalt. As pointed out above such a large range fails to provide sufficient support to support a rejection of the claimed invention under 35 USC §102(b), especially in view of the surprising results of the claimed concentration of cobalt relative to the concentration of rhenium

Rejection of Claims 14-23 Under 35 U.S.C. 103(a) – Czech ‘238 and Sommer

Claims 14-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Czech ‘238 in view of Sommer. Czech is part of the same family of patents as previously cited Czech ‘712, and does not provide a disclosure that is any more relevant to the claimed invention. As noted above, both references, Czech ‘238 and Sommer, fail to disclose a narrow range which is 24-26%. Indeed, both disclosed much larger ranges of percent by weight of cobalt and rhenium and fail to provide sufficient specificity to support a claim for anticipation or obviousness. As noted above, this narrow range of cobalt surprisingly, significantly and disproportionately improves the thermal and mechanical properties of the protective layer. Combining Sommer with Czech ‘238 would at best provide cobalt in the range of 18-28% by weight. However, there is no suggestion or motivation to provide the combination of cobalt with rhenium in the precise respective ranges of 24-26% and 0.5 – 2% by weight.

Rejection of Claims 14-23 Under 35 U.S.C. 103(a) – Czech ‘712 and Sommer:

Claims 14-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Czech ‘712 in view of Sommer. As noted above, Czech ‘712 and the Czech ‘238 are from the

same family of patents and neither of these references discloses any matter that is more relevant than the other. Accordingly, Applicant's remarks relative to the rejection to claims 14-23 based on the above combination of Czech '238 and Sommer apply equally to this rejection.

Rejection of Claims 14-23 Under 35 U.S.C. 103(a) – WO '527 and Sommer:

Claims 14-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over WO '527 in view of Sommer. As noted above, as cited in WO '527, the significant range of the elements disclosed, such as 0-20% rhenium, 15-35% chromium, and 7-18% aluminum that are so large, can only mean that there would be a significantly larger range of cobalt (relative to the narrowly claimed range) that may be used as a remaining element. Such a range is much too large to provide sufficient support in the specification to warrant a rejection under 102(b) or 103(a).

In addition, combining WO '527 with Sommer does not arrive at the claimed narrow ranges of percentages of cobalt and rhenium. Combining Sommer with WO '527 would at best provide cobalt in the range of 18-28% by weight. However, there is no suggestion or motivation to provide the combination of cobalt with rhenium in the precise respective ranges of 24-26% and 0.5-2% by weight. As noted above, selecting 24 to 26% cobalt surprisingly, significantly and disproportionately improves the thermal and mechanical properties of the protective layer 7.

Rejection of Claims 14-23 under 35 U.S.C. 103(a) - EP '454 and Sommer:

Claims 14-23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over EP '454 in view of Sommer. Applicant acknowledges that EP '454 teaches a coating composition comprising 0.5-2% Re, 15-21% Cr, 9-11.5% Al and 0.05 -7% at least one rare earth and the balance of nickel and/or cobalt. As noted above, even given the small percentage range of rhenium disclosed in this EP '454 reference there remains a potentially range of percentage of cobalt as compared to the narrower 24-26% claimed cobalt. As pointed out above such a large range fails to provide sufficient support to support an rejection of the claimed invention under 35 USC §102(b), especially in view of the surprising results of the claimed concentration of cobalt relative to the concentration of rhenium.

In addition, combining this EP '454 reference with Sommer does not arrive at the claimed narrow ranges of percentages of cobalt and rhenium. Combining Sommer with Stamm would at

best provide cobalt in the range of 18-28% by weight. However, there is no suggestion or motivation to provide the combination of cobalt with rhenium in the precise respective ranges of 24-26% and 0.5 – 2% by weight. As noted above, selecting 24 to 26% cobalt surprisingly significantly and disproportionately improves the thermal and mechanical properties of the protective layer 7.

In view of the foregoing remarks the Examiner has failed to establish that any of the cited references anticipate independent claims 14 and 19, and the Examiner has failed to make out a *prima facie* case of obviousness. Therefore, the independent claims are in condition for allowance as well as all claims depending therefrom.

Conclusion:

For the foregoing reasons, it is respectfully submitted that the objections and rejections set forth in the outstanding Office Action are inapplicable to the present claims. All correspondence should continue to be directed to our below-listed address. Accordingly, Applicant respectfully requests that the Examiner reconsider the objections and rejections and timely pass the application to allowance. Please grant any extensions of time required to enter this paper. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including fees for additional claims and terminal disclaimer fee, or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

Dated: Jan. 20, 2010

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